Wisconsin
Department of Commerce

Approval # 20020006

Environmental & Regulatory Services Division
Bureau of Petroleum Products and Tanks
201 West Washington Avenue
P.O. Box 7837
Madison, WI 53707-7837

Wisconsin COMM 10 Material Approval

Equipment: Claymax 600CL, Bentomat CL, and Bentomat CLT Geosynthetic Clay Liners

Manufacturer: Colloid Environmental Technologies Co.
1500 W. Shure Dr.
Arlington Heights, IL 60004

Expiration of Approval: December 31, 2007

SCOPE OF EVALUATION

The Claymax 600CL, Bentomat CL, and Bentomat CLT geosynthetic clay liners (GCL), manufactured by Colloid Environmental Technologies Company (CETCO), have been evaluated in accordance with **section COMM 10.345(1)(e)** of the Wisconsin Administrative Flammable and Combustible Liquids Code.

This approval has been based upon Commerce evaluation of information submitted by the manufacture and third party evaluation and is considered confidential. Specific information relating to qualifying the information submitted should be made to the manufacture or submitter.

This evaluation summary is condensed to provide the specific installation and operation parameters necessary to maintain the subject systems in compliance with the Wisconsin Administrative Code – Comm 10.

DESCRIPTION AND USE

The Claymax 600CL, Bentomat CL and Bentomat CLT geosynthetic clay liners (GCL) are bentonite and geotextile composites engineered for use in a variety of lining applications.

The Claymax 600CL geosynthetic clay liner is an unreinforced GCL consisting of a layer of sodium bentonite clay between a geotextile and a laminate comprised of a geotextile and a polyethylene membrane which are continuously adhered together.

The Bentomat CL geosynthetic clay liner is a reinforced GCL consisting of a layer of sodium bentonite clay between two geotextiles, which are needlepunched together and laminated to a thin flexible polyethylene geomembrane.

Bentomat CLT geosynthetic clay liner is a reinforced GCL consisting of a layer of sodium bentonite clay between two geotextiles, which are needlepunched together and laminated to a 20-mil (0.5 mm) textured polyethylene geomembrane.

The use of a polyethylene membrane increases the rated shear strength and the residual hydration capability of standard non-laminated GCL's.

All products are installed using CETCO's installation documentation, which details subgrade preparation, seam overlap, seam placement, anchorage, penetration details, covering soil placement, and hydration requirements.

TESTS AND RESULTS

The permeability of all products when exposed to water was determined by testing to be less than $5x10^{-10}$ cm/sec. When exposed to hydrocarbon fuels (gasoline, diesel, jet fuel), or repetitive freeze-thaw cycles, permeability was not adversely affected.

LIMITATIONS OF APPROVAL

- The design and construction of the containment dike shall be under the direction of a Wisconsin Licensed Professional Engineer, familiar with the practice of containment dike design, and the use of geosynthetic clay liners.

- The liners shall be installed in accordance with manufacturer's instructions and **COMM 10.345 (1) (e).**

- For bulk chemical storage containment the liner must be applied as recommended after consulting with the manufacture to address compatibility issues.

- Releases of product shall be addressed in accordance with the procedures specified in parts 5 and 6 of **COMM 10** subchapter **VI**. The liner or portions of the liner that came in contact with product shall be replaced when determined to be necessary as a part of the release re-mediation.

- Tank foundations shall be designed to minimize the possibility of uneven or excessive settling. Tank foundation designs and any discontinuities in the liner within the diked area shall be shown on plans including the method for assuring an adequate product-tight barrier.

- All installation, repair and maintenance of the dike liner shall be performed in accordance with the manufacturer's recommendation and all applicable codes. In addition, a qualified technician shall conduct all necessary maintenance and calibration procedures as recommended by the manufacturer to assure continued and proper operation of the liner. Inspection must be conducted annually by a qualified technician and all respective documents maintained on site.

This approval will be valid through December 31, 2007, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The Wisconsin Material Approval Number must be provided when plans that include this product are submitted for review.

DISCLAIMER

The Department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement unless specified in this document.

Reviewed by: _____

Greg Bareta, P. E.
Engineering Consultant
Bureau of Petroleum Products and Tanks

Approved by: _____ Date: _____